BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: BTECH **SEMESTER : V/ADD**
BRANCH: ECE **SESSION : MO/2025**

SUBJECT: EC307R DATA COMMUNICATION

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Name the devices and the techniques used for different types of Data to signal conversion.	[2]	CO-1	2
Q.1(b)	Find out the relationship between Channel capacity and bandwidth in noise free and noisy channel. What should be the SNR in dB in which the channel capacity will be same for noisy and noise free channel. Assume the signal representation is binary.	[3]	CO-1	4
Q.2(a)	Draw the time sequence diagram for service primitives in confirmed services. Explain the primitives used in this service.	[2]	CO-5	2
Q.2(b)	Explain the function of different layer of TCP/IP. Compare it with OSI	[3]	CO-5	2
Q.3(a)	Write down the design goal of scrambling technique. Explain why code violation is required.	[2]	CO-1	2
Q.3(b)	Define Baud rate. Find the relationship between data rate and baud rate. Draw the signal representation of the following bit pattern using Manchester coding: 1100101011.if this data is transmitted in 1 mili second, what is the data rate and the baud rate.	[3]	CO-1	4
Q.4(a)	With suitable example explain asynchronous transmission technique. Write down its limitations. How these limitations can be overcome?	[2]	CO-1	2
Q.4(b)	Differentiate between forward error correction and backward error correction. What are the possible outcomes of the forward error correction techniques?	[3]	CO-1	3
Q.5(a)	What is loopback testing? Why it is done. Write down the circuit condition for Local loop back testing.	[2]	CO-2	2
Q.5(b)	Find the frame to be transmitted using CRC for a message M = 1010101101, the pre-defined devisor is X^5+X^2+X+1.	[3]	CO-2	3

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